NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety
Washington, D.C. 20594

March 22, 2017

Attachment 3 - American Airlines Personnel Interviews

OPERATIONAL FACTORS / HUMAN PERFORMANCE

DCA17FA021

Interviewee: Laurence Keelan Abernathy
Date: January 9, 2017
Time: 1416 CST[1]
Location: American Airlines Training Center conference room
Present: Shawn Etcher, Katherine Wilson – NTSB; John Chiros – FAA; Gavin Tade – APA; Robert Aaron (via telephone) – Boeing

Captain Abernathy was represented by Gary L. Halbert –Attorney, Holland & Knight.

During the interview, Captain Abernathy stated the following:

He was 58 years old. He was the manager of flight training and standards as well as a fleet captain for the B757/B767 at American Airlines. His date of hire was February 12, 1985.

He started November 1, 2015, as the B757/767 fleet manager.

He attended and graduated from the Aviation Management program at Auburn University in the late 1970s. He spent 1 year working as a flight instructor building time and then flew as a corporate pilot for 4 years before being hired by American.

He had an airline transport pilot (ATP) certificate with type ratings in the B727[2], B757[3], B767, Fokker (FK)-100[4].

He had approximately 22,000 total hours of flight experience and about 12,000 hours of flight experience in the B767.

Prior to his current position, he was a check airman on the B757/767 fleet. He received his initial check airman letter in 2008. He received initial training on the B767 in 1986 then flew various aircraft before flying exclusively on the B757/767 fleet since 2005. He flew the line to maintain the required proficiency flying maybe 15 trips a year.

He held an ATP and was type rated in the B757/767, B727 and FK-100.

He would initially report to the director of the Boeing fleet, Scott Smith, and then to the managing director, Jim Thomas, and then the Vice President of Flight, Kimball Stone.

In his opinion, the B757/767 fleet was adequately staffed with pilots. The training department was also well staffed. They were in the process of hiring additional check airmen due to an increase in training scheduled in February 2017 so they were slightly overstaffed.

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1 All times are Central Standard Time (cst) unless otherwise noted.
2 The Boeing Company, B727, B-727-100, B-727-200. Source FAA Order 8900.1, Figure 5-58
3 The Boeing Company, B757-200, B-757-300, B767-200, B767-300, B767-400ER. Source FAA Order 8900.1, Figure 5-88
4 Fokker, Netherlands, Fokker 28 Mk 0100. Source FAA Order 8900.1, Figure 5-88.

He concurred that American had ASAP, FOQA and LOSA programs in place. He and the pilots received trend information learned from these programs through a variety of methods such as safety alerts, safety bulletins, and alerts pushed to company iPads. He also would talk to Chris Moran and he would be briefed following the check airmen's monthly Operational Data Analysis Working Group (ODAWG) meeting.

There were also operations change management (OCM) meetings that evaluated trend data and would put the information together into a policy that applied to all fleets. Finally, there was the flight operations standardization board (FOSB) which focused on standardizing policies and procedures. As a part of that process, the FOSB might identify trends. He did not want to specify trends in the data because American was still working to address them.

The time it took to make changes depended on the criticality of the trend identified. If it was a minor issue identified through LOSA, it would likely just be sent to the check airmen to watch for and discuss the item during line checks. If it was a bigger safety concern, American would push that to the pilots more effectively. If the information was identified during a training cycle, it could take as long as 9 months for pilots to be made aware. Relatively important trends could be pushed to pilots in a few hours via flight plan notes or the CCI (crew check in).

American had not disseminated any information to the fleet about the accident flight although the training department was considering some changes. Those changes were not related to the event specifically, but that the event enhanced what was already in the works. Specifically, they had seen a number of RTOs in the data and felt it was important to enhance their RTO training. Neither the procedure nor the policy had changed but they were reenergizing their emphasis on RTOs.

He did not know how many RTOs American had experienced but he was aware of about three that were noteworthy in the B757/767 fleet because they involved tire failures. He did not receive the raw data because it was deidentified through FOQA but he estimated from the trend data that the RTOs occurred between 80 knots and V1.

He believed American's RTO policy came directly from Boeing. Crews should reject above 80 knots for an engine failure, fire or fire warning, predicted windshear, or if the captain believed the airplane was unable to fly.

He clarified that the tire failures in the RTOs he mentioned occurred during the RTO and was not the initiating factor of the RTO.

The captain made the decision to abort a takeoff based on the conditions of the aircraft. The procedure was to retard the thrust levers, deploy the speedbrake, turn off the autothrottles, and move into reverse. The first officer (FO) would observe that the engines were in reverse, the speedbrakes had deployed and ensure the autobrakes had not disconnected. If they had disconnected, the FO should state "autobrakes off." This was trained in the simulator; it was discussed in the briefing and then demonstrated in the simulator. It was part of continuing qualification (CQ).

Crews may not be aware of the training scenarios prior to training but they were briefed before the simulator session.

He was not aware of any other RTO event for an engine failure since he had been in his current position.

Evacuation training occurred during the CQ cycle. Each CQ consisted of four components – online distance learning, ground school, recurrent training in the simulator (RTS) and either R9 (line oriented) or R18 (maneuvers). Evacuation training was a part of RTS and was not only trained following an RTO.

The crew was not required during training to call the cabin to alert them to evacuate, however, the training profile in the last 9-month cycle did include a conversation with the cabin as a part of the script.

Training was done in 9-month cycles. The training progressed through interval 1, then interval 2 and were currently in interval 3 as of January 1, 2017. Interval 2 included communications with the flight attendants. He had not received any negative feedback from the training or the script used.

Pilots with feedback on training could call him directly or APA had a debrief program where pilots could complete an online form to provide feedback. That information was deidentified. He had never received negative feedback about the simulator, only positive stuff particularly about specific instructors which he would then pass along to them.

He did not have access to the data in front of him about unsatisfactory training events so it would be a guess as to how many there were. Unsatisfactory training events occurred but he knew the frequency was quite low. The remedial actions following an unsatisfactory event depended on when, in training, the unsatisfactory event occurred. If it occurred during RTS, they would provide additional training and then the pilot would go on to R9 or R18. If the pilot was not successful in R9 or R18, he would get remedial training. If he was still not successful, there was additional remedial training. At a certain point, there was a formal review committee that would review the pilot's records and make a determination as to how to proceed. In the 17 months that he had been in his current position, he had seen a pilot sent to the review committee twice.

There was no joint training between cabin and cockpit crew members, not currently or in the past. There was guidance in the flight manuals about concurrent flight attendant duties so pilots should have some working knowledge of that.

Emergency equipment was discussed in ground school. Pilots were required to use the emergency equipment in training and use it in the cockpit. Emergency equipment was discussed at the end of evaluation training but pilots did not use it as a part of the evacuation training. Crews would complete the evacuation checklist and then the instructor would ask the captain and first officer what they would then do; the first officer should take the fire extinguisher when exiting the cockpit. There was nothing documented about flight crew taking personal protective equipment, such as the portable oxygen, when evacuating. The crew was not required to take their paperwork with

them from the cockpit when evacuating and they could get the passenger count by calling the company after exiting the airplane.

American did not train specifically for an uncontained engine failure; training was for an engine failure and the type of failure was determined by the flight instructor.

It was the flight crew's responsibility during an evacuation to ensure passengers were off the airplane, get the passenger count, coordinate with the flight attendants to gather passengers away from the airplane and communicate with ARFF. The guidance suggested that the captain pass through the cabin and exit at the aft most exit but there was no specific guidance on when not to do that. It was implied to do it only if it did not compromise the captain's safety. Once off the airplane, it was the flight crew's responsibility to gather passengers away from the airplane. Communications with ARFF was not discussed in the guidance. The flight attendants were also tasked with gathering the passengers so they would coordinate with the flight crew but there was no specific communications that had to be done.

Human factors was taught in ground school; there had been content changes as it when through each training cycle. CRM was included in human factors training.

American had been teaching human factors and safety training for a while and there had been several versions of the class. Threat and error management (TEM) was what they trained now. It incorporated all elements of CRM into a broader package and helped crews identify specific barriers to problems with the aircraft or crew. TEM was incorporated into every aspect of training – in grounds school, RTS, R9 and R18.

He did not know the accident crew and there was nothing noteworthy in their personnel or training files that he reviewed.

In the previous 12 months, he kept the worksheets that the instructors used to take notes, document scores and items for the debrief, which included the accident crew's most recent training event before the accident. Both crewmembers were in the CQ R9 cycle and their documents showed that they successfully completed the RTO and evacuation portions of training. There was an internal discussion about how long to keep those worksheets, such as 30-45 days. To simplify his life, he made a file for each month and kept the files in there. As the year progressed, he would pull out the documents from the previous month and year and shred them. It was not required that these documents be kept but just something that he did.

He had never heard the accident crew's names before the event and had not heard anything negative about them since the event. Everyone had positive things to say about the crew, such as they were conscientious and good to fly with.

Training did not include an actual smoke filled cabin.

He did not think there was not a big difference in checklists and procedures when American acquired TWA, but he never saw it so did not know for sure.

The briefing to the cabin crew was left up to the discretion of the captain as to if it was to be done to the entire cabin crew or just the purser.

There were no means to put smoke in a simulator for training.

American had such standardized procedures that the crew did not need to brief everyone on things like what to do if they performed an RTO or had to evacuate. There were a few items that the captain was required to brief the FO on before takeoff. Captains can, and certainly did, expand the brief beyond those items.

He was not aware of this specific crew's pretakeoff briefing and how that captain managed it. The captain was able to expand the briefing. Reasons for an abort were standardized. He felt a typical takeoff briefing could be "if you see something you don't like tell me and I will make the decision and do the abort." To go through an entire list would lose the other pilot within 15 seconds because he already would know all of that.

He did not know any additional questions that he wished he had been asked during the interview. He added that pilots were trained to make assumptions on every takeoff that something could go wrong. What he knows about the accident, the things he knew could go wrong can change quickly. He thought the accident crew was responding to each new piece of information as effectively as they could as it was being presented to them. They had to shift gears several times to very different circumstances. In the real world, procedures may not be exactly right because failures did not occur in a package like they did in the simulator. They needed to give pilots the tools to adapt as situations changed. They taught procedures but also taught pilots. They needed pilots to adapt. Pilots needed to be prepared for the situation changing. He was not advocating for abandoning procedures or teaching compound emergencies, but this event was a compounding emergency.

Asked if anything could be done differently, he said the operational change management group looked at the evacuation checklist about a year ago and recreated it. For the B757/767 fleet, there were only minor changes. Specifically, the evacuation checklist was changed on April 1, 2016. He thought they improved it by streamlining it, removing excess verbiage, and making it less cumbersome. The accident captain was in training in March 2016, before the checklist change, but he had access to the new checklist per the revision process and would have replaced it in his book. Captain Abernathy did not think the checklist was as cumbersome as the accident captain felt; it was much more streamlined. In September 2016, the first officer was trained on the new checklist and made no mention of it being cumbersome. During the accident, the accident captain would have been responding to the FO reading the checklist; he would not have had the checklist in his hand.

The interview ended at 1521.

Interviewee: Captain Price – Miami Base Chief Pilot

Interviewee: Jeffrey Alan Price
Date: January 9, 2017
Time: 1550 CST

Location: American Airlines Training Center conference room
Present: Shawn Etcher, Katherine Wilson – NTSB; John Chiros – FAA; Laurence Abernathy – American Airlines; Gavin Tade – APA; Robert Aaron (via telephone) – Boeing

Captain Price was represented by Gary L. Halbert – Attorney for Knight & Holland

He was 56 years old. He was the chief pilot at the American Airlines Miami base. His date of hire with American was November 6, 1991. He had been a chief pilot for about 8 months, since May 2, 2016. He had an ATP and was type rated in the B757/B767. He had about 11,000 hours total time, about 7000 hours of which were in the B757/B767

He started his aviation career in the USAF as an instructor pilot at Columbus AFB and then went to Randolph AFB as a part of their pilot instructor training (PIT) program where he trained instructors. At American, he flew as a B727 flight engineer, a B727 first officer, a B767 first officer, a B777 first officer, a B757 captain, back to a B777 first officer and then a B767 captain. He did not recall the specific date that he became a check airman but it was in September 2014.

As a chief pilot, he reported to the Director of Flight, Brian Beach. As a chief pilot, his duties and responsibilities were to facilitate the lives of pilots at the base, such as days off and travel arrangements. A small part of his job was to take disciplinary action, but his main duties were to facilitate pilots in whatever way they needed.

He had been a chief pilot for 8 months and never had to take disciplinary action on a pilot.

He reported to Brian Beach and then Mark Cronin.

He thought the staffing of chief pilots was just about right. American was hiring another chief pilot which he thought would be a nice addition. The position kept him busy. As for the pilots, he thought with training that sometimes they were a little understaffed but generally speaking the pilot group was well staffed. American seemed to be staffed adequately; they were hired and filling in empty spots.

Miami used to be a junior base but he thought it was a more of a mid-seniority base.

If a pilot had a concern, they could call him on his cell phone or at the office; they could also text him. He would provide the pilots with feedback on their concern by calling them back directly or emailing them with the solution. It depended on the issue but he always gave them feedback.

He did not have any concern about the pilots at the Miami base. The base had 2250 pilots across multiple fleets; he was not sure how many pilots were on the B757/767 fleet.

He did not know the accident crew. He had never heard of them before. After the event, he caught an occasionally conversation about them; it was all good about the pilots and they had “solid reputations.”

There were a variety of reasons pilots went to training and it was scheduled in such a variety of ways. He did not think he was a good person to ask how training was scheduled. Pilots received a prebrief before the simulator and then would act out the scenario in the simulator.

He was a line check airman (LCA); he was not an X type check airman that also did checks in the simulator. They would not enact an evacuation and RTO during line checks but it was discussed. He never had an RTO during a line check but thought as a line pilot he did an RTO one time for a compressor stall early in a takeoff roll.

He had not talked with the accident crew since the accident.

He flew the line to maintain currency and over the past few months had been flying charter flights.

There were four chief pilots at the Miami base; there were no assistant chief pilots. The chief pilots were not fleet specific.

Information was distributed to pilots via the CCI, Miami Weekly, and HI6; all were electronic. The chief pilots also had an open door policy and there offices were located right by operations. He clarified that HI6 was a messaging system. CCI was for informational purposes and pilots could access it on their cell phones and iPad.

If a pilot had a concern, they could go through the union; the union also dealt with FOQA data. The chief pilots would be briefed on safety trends; they got the same information as the pilots. There were also quarterly chief pilot meetings where they would discuss what was trending. The chief pilots also received daily emails about what was going on in line operations.

Prior to the accident, there were discussions about high speed RTOs. They were alerted to take a look at those prior to and after the accident. It was mostly discussed in training and would not be shared in a communication like the Miami Weekly. Safety data was not shared by the chief pilots.

He always felt that the cockpit-cabin interaction was adequate.

He did not recall ever not hearing the cabin calling the cockpit but it might have happened.

He was not in the office when the accident occurred; the word came in and someone brought it to his attention. Their attention was raised at that point and he was on standby for more information. He got on the bridge line. He recalled that he was actually not in the office at that time but Mike and another chief pilot were. He thought he was driving when he got on the bridge line. That call involved a variety of departments and he did not have any action items as a result of that call.

He never heard any concerns about checklists being cumbersome.

He did not hold his check airman letter as a chief pilot.

Changes to the manuals came over their iPad and if there were paper checklists then those were put in their box and they had to manually update the paper copy.

Pilots were responsible to check their manuals.

He thought there were four LCAs in Miami.

In addition to quarterly chief pilot meetings, they also had weekly operations calls that he sat in on. That was where most information came from. The conference call was probably the most important call where the chief pilots got information.

American used paper checklists for normal procedures and paper or electronic checklists for non-normals. He used the paper checklist more often than the electronic.

During a line check, he never had a crew experience an emergency so he did not know if pilots used the paper checklist or electronic more.

The iPads were embraced by pilots and he did not sense any resistance to that.

He went through the crew's files although it was not required. They had "good, solid records" and no disciplinary issues.

He did not have anything to add to the interview.

The interview ended at 1625.

Interviewee: Joseph John Romano
Date: January 9, 2017
Time: 1632 CST

Present: Dr. Katherine Wilson, Shawn Etcher – NTSB; John Chiros – Federal Aviation Administration; Laurence Abernathy – American Airlines; Gavin Tade – Allied Pilots Association

Via Teleconference: Robert F. Aaron Jr. - Boeing

Captain Romano was represented by Gary L. Halbert, - Attorney, Knight & Holland

During the interview, Captain Romano stated the following:

He was 59 years old. He was a check airman B757/767 for American Airlines.

He had an ATP certificate, commercial instrument with type ratings in the A300, A310[5], B737[6], B757, B767, and L188[7]. He also flew the P3 in the US Navy.

[5] Airbus, A-300-600R, A-310. Source FAA Order 8900.1, Figure 5-58
[6] The Boeing Company, B737-100, B-737-200, B-737-300, B-737-400, B-737-500, B-737-600, B-737-700C, B-737-800, B-737-900. Source FAA Order 8900.1, Figure 5-58
[7] Lockheed Aircraft Corp., USA, Electra 188, P-03, EA. Source FAA Order 8900.1 Figure 5-88

He had approximately 15,000 total hours of flight experience and about 2,100 hours of flight experience in the B757/767.

His date of hire with American Airlines was June of 1990. American Airlines was his first carrier.

He had about 3,000 hours on the P-3 aircraft.

He summarized his aviation career by stating that he graduated from the United States Naval Academy in 1979, got his wings in 1981 and was in the military as active duty in Hawaii and Pennsylvania before moving from active duty to the reserves. He then joined American Airlines in 1990.

He was based in New York City and pilots in New York City were responsible to cover all the local airports in New York City; however, the B757/767 was primarily out of John F. Kennedy International Airport.

He did not know either of the accident crewmembers.

He gave the accident captain a checkride in the simulator in March of 2016. He further stated that he was an "X type" check airman, which allowed him to conduct checkrides in the simulator and line checks in the airplane. He had never given the captain a line check in the airplane that he could recall. He could not recall anything specific from the simulator checkride with the captain.

He estimated that approximately 60 to 70 percent of his work month was conducting simulator checkrides in Dallas; the rest of the time he was doing line checks. A line check was done on a line flight observing a crew perform normal procedures and the interaction of the crew with external activities. A majority of the flights were extremely positive.

When asked if he utilized a checklist to make sure everything was accomplished on a line check, he stated that mostly had to do with normal procedures. He was there mostly as an observer; however, he did take notes and debriefed both good things and things that could be improved. In the simulator, there was a grade sheet that was utilized during the qualification simulators including ATP rides and CQ. There was a script that was followed in the simulator. The checklist was used for specific tasks and they were identified with specific parameters for passing.

When asked to describe the grading system, he stated that it was based on a score of 1 to 5, with 5 being the best. He did not usually give a 1 as that meant that the pilot was not meeting standards and retraining was necessary to get them back to speed. For example, during a single engine V1 cut, a pilot might have a problem with rudder input and additional training in order to be within the tolerance that was allowed. Some pilots might get distracted with "tunnel vision." He did give 5s; however, for a pilot to achieve that level everything had to be within American Airlines procedures and standards; it occurred in many simulator sessions. He felt that the average score was probably a 4 under the current threat and error management (TEM) grading system meaning that an error was made, caught, and corrected by the crew.

Training for rejected takeoffs (RTOs) started with a 2-hour briefing followed by a 4-hour simulator period. The briefing addressed certain criteria and making sure that a rejected takeoff may have been warranted. The captain would make the call on whether to make an RTO. He would determine the criteria that would have to be met and if an RTO was warranted. The go/no go point was 80 knots. The takeoff would be continued for most things. He also taught variables that the crew would encounter outside the normal parameters such as swerving on takeoff that could mean a controllability issue. He provided an example of a RTO situation on a checkride as hydraulic system failure below 80 knots in which the master caution would illuminate and the captain should reject the takeoff. If the same event happened above 80 knots, the captain was expected to resolve it and keep going.

He did not recall when he had given a tire failure scenario but was sure he had. He had also given an uncontained engine failure during checkrides; crews seldom misinterpreted that. He felt that the crew have a nice big visual when the airplane would swerve and that would be an immediate cause for a rejected takeoff.

Each pilot was given a quick reference handbook (QRH); the captain carried a B757 checklist, and the first officer carried a B767 checklist. The location that a crew would keep the checklist available was up to them as there was no specific procedure. There was a place to put the checklist on the glareshield and he classified it as a preference of the individual crewmembers.

When asked if an emergency evacuation was conducted in the simulator, he stated that there had been changes in the scenario, and the crew got a briefing discussion with slides in the briefing room. The simulator event would be an RTO or emergency landing that evolved into an evacuation. He felt that it could vary from simulator to simulator period. The scenario allowed the crew to make a decision and included a simulated flight attendant call about flames and smoke in the cabin. This was typically at the end of the simulator session and the crew would utilize the checklist and evacuate the simulator.

The first officer knew they needed to obtain the halon extinguisher and exit through the forward door and assist with moving passengers away from the aircraft. The captain would exit the cockpit, grab the megaphone, and exit via the most aft exit ensuring the aircraft was empty; then the captain would assist with the passengers. The crew's duties were to gather the passengers away from the aircraft and when ARFF arrived, to relinquish control to them.

The crew was provided load closeout paperwork which had the total number of souls on board. He had seen crews write that number on a piece of paper and place it in front of them on the pedestal in case that information was needed.

On the legacy American Airlines aircraft, the B767 had an electronic evacuation signal, but the primary evacuation signal on the fleet was to utilize the public address system and, if installed, then the evacuation button. The B757/767 aircraft obtained from US Airways during the merger did not have that option.

American Airlines provided the training information on the AA website so nothing was a surprise to pilots. The crew would know in advance mostly, what would be required of them. If it was the

line oriented flight training (LOFT) (R9), it would be abnormal procedures. They did have "first look" scenarios which would not include a prebrief. They wanted to see if a line pilot could come in and meet the standards, such as with a V1 cut. He would expect the pilot to perform within the standards, including use of the checklist and communication. The V1 cut would typically be an engine out scenario and the crew would be able to maintain control of the airplane, climb safely and properly up to altitude and then execute the checklist.

As a check airman he had not given a line check in the airplane in which an emergency occurred. The only tire failure he had was during his military flying. Asked if the simulator adequately replicated a tire failure event, he said each simulator had its own nuances. A tire failure was "interesting" and there was no light indicating there was a tire failure. When he inserted a tire failure event in the simulator, the crew was usually wondering what the noise was and realize that something was not right with the aircraft. The crew would normally correctly assess it and conduct an RTO. A tire failure after 80 knots was a "grey area" as to whether or not to reject. He could not recall a specific tire failure he gave above 80 knots.

In his experience, an uncontained engine failure in the simulator required the instructor to give additional cues external of the cockpit due to limitations of the simulator.

After 80 knots the master caution would be inhibited by the aircraft as designed.

The flight attendants could initiate an evacuation and the crew would be alerted by the doors opening up on the EICAS[8]. On the legacy airplane there was an electronic evacuation switch from the cabin. However, they could not simulate that in the simulator as they did not have the ability. The instructor would be required to simulate external cues.

As an instructor, he expected the crew to know what they needed to do in an evacuation. They did discuss it during training. They would also discuss communications with the cabin crew during the simulator session.

He was not sure on how often a crew needed a line check. It was not announced, however, he would be listed on the crew list as a supervisor and the pilots would know that they were getting a line check.

He felt a great majority of the emergency procedure checklists were good. Some things could be better but their training emphasized the need to go step-by-step; it build confidence in the crew members. He felt that the procedures were good.

If a crewmember forgot a paper copy of the QRH, they could get a loaner copy from the bases.

Evacuation procedures in the simulator were usually done at the end of the session because they would shut everything down.

The testing of the evacuation alarm was not part of any origination checklist.

[8] Engine Indication and Crew Alerting System

He felt any additional training was good training, especially anything that would enhance what the crew already knew. He had never seen the flight crew doing an evacuation with the flight attendants. He could only see a positive outcome from joint cockpit-cabin crew training because if someone did not know what his counterpart was doing, that could be a concern. Pilots did not need to know the responsibilities of flight attendants but it would be nice to be aware.

A RTO was a specific procedure in the maneuvers section of the QRH but there was no specific checklist for a rejected takeoff. Pilots relied on their experience and training to perform the maneuver.

He clarified that a line check was a revenue flight in which he was seated in the jumpseat observing a crew's duties; he would not classify the simulator checks as a line check.

Engine out was a first look maneuver. He was familiar with an RTS and RVA. He did not conduct RTS events.

He clarified that there was no button for an uncontained engine failure. To simulate an engine failure in the simulator, he would select the malfunction, and then left or right engine. Depending on the simulator, the instructor could preprogram the speed for the failure to occur or could activate the event immediately. When the button was pushed or preprogramed, it was instantaneous and the indication would be the "swerve" if there were not secondary indications. In order to simulate severe damage, he could select an engine seizure, engine fire, and others.

He had given option 5, which had an engine fire in their past 18 months training event. The event included a simulated call up from the cabin crew so the pilots did communicate with the cabin attendants. He had to provide external simulated cues to allow the crews to assess the situation.

If he simulated a door opening it may take a crew a little time to identify it, especially if there was a lot of other messages on the EICAS. If a crew noticed a door light on the EICAS they would know an evacuation was on going.

The QRH[9] did have a section of memory items. The crews were required to know the memory items, as it was part of the qualification training. Sometimes they would not remember them, but that was part of CQ to get them back up to speed.

The simulator was not equipped with anyway to produce simulated smoke.

His goal as an instructor pilot was to have a crew leave the training center a little more confident and a little more knowledgeable about the tools they had to use on the line. He had received numerous positive responses. If a crew had a concern and voiced it to him, he took that as constructive criticism. He felt there was nothing better than identifying a deficiency and then he would take it to the fleet captain. He felt it was part of any evolving program.

He did not have anything else to add to the interview.

[9] Quick Reference Handbook

The interview ended at 1737.

Interviewee: Greg Michael Gearing
Date: January 9, 2017
Time: 1832 CST

Present: Katherine Wilson, Shawn Etcher – NTSB; John Chiros – Federal Aviation Administration; Laurence Abernathy – American Airlines; Gavin Tade – Allied Pilots Association

Via Teleconference: Robert F. Aaron Jr. - Boeing

Captain Gearing was represented by Gary L. Halbert – Attorney for Holland and Knight

During the interview, Mr. Gearing stated the following:

He was 62 years old. He was a check airman in the B757/B767 for American Airlines.

He had an ATP certificate with type ratings in the T-39, B737[10], B757, and B767.

He had approximately 14,000 total hours of flight experience and about 4,000 or 5,000 hours of flight experience in the B767.

He had been a check airman since November 2011 and he was a X-type check airman as he did both simulator and line checks. He was hired at American Airlines in September 1988.

He started in the Air Force ROTC at University of California and was in the Air Force for about 12 years. He started at American as an engineer, then an engineer check airman, then a first officer on the B757/767, first officer on the super 80, then first officer on B777, captain on B757/767, then captain on the B737, and was currently a captain on the B757/767.

He did not know either accident crewmember.

He was based at Dallas/Ft. Worth Airport. He normally worked 17 days a month and alternated between line check and in the simulator. He estimated that he worked 10 days a month in the simulator. He did initial, transition, recurrent and lines checks. He was also a designee for qualification rides and rating rides. It had been awhile since he had done initial or transition training.

He did teach RTOs in the simulator during the briefing utilizing slides to talk about the procedure, reasons to reject and the captain's decision to reject. He could not recall the primary rejected takeoff scenario. They also did a landing to an evacuation scenario. Flight crews would stop the airplane and the instructor pilot would provide external cues such as ATC stating a wing was on fire. The captain would then command the evacuation. During the evacuation checklist the captain

[10] The Boeing Company, B-737-100, B-737-200, B-737-300, B-737-400, B-737-500, B-737-600, B-737-700C, B-737-800, B-737-900. Source FAA Order 8900.1, Figure 5-88

would announce to the cabin to evacuate. The evacuation procedure had changed from the captain and first officer splitting the duties to the first officer reading the challenge and response, and the captain doing the items. He felt the change had caused some challenges as the change had occurred about a year prior. Crews did not particularly complain about the change, he just attributed that to muscle memory being different.

He was not sure if an evacuation was required. Under an R18 training event there was an evacuation scenario and in initial qualification there was a RTO.

He had rejected a takeoff twice as a first officer, once, when an engine did not come up to power and the other when a truck entered the runway. There were no issues performing those RTOs. He could not remember any differences from those rejected takeoffs to now. He had never experienced a rejected takeoff as a line check airman sitting on the jumpseat. He had not conducted an evacuation at American Airlines.

He felt pilot morale was pretty good and pilots were receptive to training. He had some unsuccessful checkrides, which were due to not knowing their procedures correctly resulting in additional training. He could not remember if any of those unsatisfactory checkrides were for an RTO for an engine fire or an evacuation.

In the simulator a majority of pilots used the paper checklist but some used the iPads. He saw no problems when pilots used the iPads.

During an unplanned evacuation, the cabin attendants would be notified when the captain announced to evacuate, after the engines were shut down. After the evacuation call, there were still items on the checklist for the crew to complete. The flight attendants would be aware of a planned evacuation, such as in flight and they had time to prepare.

He never had a tire failure on takeoff. In the simulator, a tire failure would be introduced usually after 80 knots. In the simulator, a tire failure may not be recognizable so the crews may have a challenge positively identifying it as such.

During a line check, he had only had a gear light that did not work, which the crew handled correctly.

If there was a smoke in the cabin scenario then he would simulate calling the cockpit from the cabin. If it was an RLE or QLE they would utilize headsets and simulate the real airplane needs. If the scenario was presented during a training event, they may not always be on headphones and only talking back in forth in the simulator.

There was no training with pilots and flight attendants combined; however, they used to years ago. They had a human factors course, which was part of recurrent training; it was classroom training.

High speed RTO scenarios in training were usually an engine fire, cargo fire, etc. but not at the same time.

There were no failures that were given below V1 where they expected the crew to continue. They did give engine fires or failures after V1 and expected the crew to continue.

When asked if he knew whom, in the cabin initiated an evacuation on the cabin crew side, he responded that he was not sure.

When asked if there was a way to simulate an evacuation going on in the cabin, he stated that they could open a door, but he had never done that. He felt that they were training pilots to procedures.

If he had simulated a door open there would be an overhead light above the captain that would illuminate and possibly an EICAS message. He trained crews to look at cues and make a decision.

He had not heard of any crews stating that the checklist were cumbersome.

He had observed crews conducting a takeoff briefing. He expected to hear who was doing the takeoff, if there was anything abnormal about the departure procedure, something that would be unique about the departure. He had had some crews briefing a rejected takeoff. Since they already had standard operating procedures, there was no requirement to brief it. The crews conducted a standard cabin briefing, how long, any weather, and any security issues. The captain was only required to talk to the purser.

There were memory items that the crews must know which were: engine fire, aborted engine start, loss of cabin pressure, unreliable airspeed, and engine stall. He thought there was a checklist for an RTO in the QRH, which required the crew to reduce the power, apply speedbrakes, thrust reversers and brakes to stop the airplane. The captain always did the rejected takeoff.

Since the accident the airline now had the crews shut down the engines as a technique. They were not teaching it as a procedure to shut down the engine out of sequence of the checklist but if they saw the cabin crew open an aircraft door. He thought it was written in the back of the QRH but not overemphasized.

He felt that if the cabin crew was calling the front during a fire warning he felt the crew should be able to hear it but it was probably not the loudest sound in the cockpit.

The captains carried the B757 QRH and the first officer carried the B767 QRH. In the simulator, many crews would put the QRH on the glareshield; however, he did not see it on the line and felt most kept it in the kit bag, which was readily available. He also flew with it in his kit bag.

The QRH Evacuation checklist was the same for both the B767 and B757.

He had nothing to add to the interview.

The interview ended at 1908.

Interviewee: Douglas Shepard Widnall, Jr.
Date: January 10, 2017

Time: 1232 CST

Present: Dr. Katherine Wilson, Shawn Etcher – NTSB; John Chiros – Federal Aviation Administration; Laurence Abernathy – American Airlines; Gavin Tade – Allied Pilots Association (APA)

Via Teleconference: Captain Widnall, Mr. Ray Duke, and Robert F. Aaron Jr. - Boeing

Captain Widnall was represented by Mr. Ray Duke – Attorney for APA Representation

During the interview, Captain Widnall stated the following:

He was a captain on the B767 for American Airlines based in Miami and had been in that position for about 3 years. He originally started with TWA on October 11, 1985.

He had an ATP certificate with type ratings in the B757, B767, and DC9[11]and a Learjet type rating. He also held CFI, MEI CFII and FE ratings.

He had approximately 25,000 total hours of flight experience and about 760 hours of flight experience in the B767.

He went to St. Louis for 9 months flying the MD-80 during the 3 years he had been a captain on the B767/757.

He flew with the accident FO prior to the accident but did not remember the date. He classified everything as standard, no delays, and no issues that he could remember. He thought DFW and ORD were airports they had operated in and out of during the pairing. He was both the pilot monitoring and pilot flying. The accident FO was very confident and a good pilot to fly with as the pilot flying. As the pilot monitoring, the FO had very good situational awareness and did not just sit in the seat. He felt the FO monitored everything that was going on around him during the trip; the FO would monitor what Capt. Widnall was doing as much as much as he would monitor himself. The FO would not hide in his copilot seat like some FOs would. He had flown with the FO three times in total and had no issues on any of the flights with him.

He classified the accident FO as "a really nice guy."

He felt the FO was open to any suggestions and they both communicated with each other. He felt the FO was happy taking input.

The FO was someone he enjoyed flying. He also felt the FO got along well with the cabin crew. He felt all pilots could improve but the FO was ready to be a captain as far as he was concerned. He never heard anyone complain about flying with the FO.

[11] The Boeing Company, DC-9-11, DC-9-12, DC-9-13, DC-9-14, DC-9-15, DC-9-15F, DC-9-21, DC-9-31, DC-9-32, DC-9-32F, DC-9-33F, DC-9-34, DC-9-34F, DC-9-41, DC-9-51, DC-9-81, DC-9-82, DC-9-83, DC-9-87, MD-88, MD-90-30, 717-200. Source FAA Order 8900.1 Figure 5-88

He could not recall the FO saying anything bad about the airplane or American. He felt the FO enjoyed his job. He had not spoken to the FO since the accident.

He had not had to perform an RTO and had never had a non-normal event after 80 knots in which he continued the takeoff.

They did training on RTOs every 9 months. They did R9 maneuvers and then LOFT, and then on the R18 they conducted the maneuvers along with a minor check ride and then extra training with things that were going to be done. The last RTO usually resulted in an evacuation. American wanted the checklist done as a "do list", and he did it the way the company wanted it done. He would make suggestions on how to do it differently, such as include a memory item. He felt that shutting down the engines first could have less potential for a passenger getting near an operating engine.

He thought the cabin attendants were to turn on the evacuation signal and they would probably also see the door lights. He felt they would notice it pretty soon if the cabin attendants were evacuating. He did not know if there was a test for the evacuation signal.

There were some times where the flight attendant chime was challenging to hear and he may only have seen the light and not heard the audible chime. The policy at American was if the cabin attendants needed to notify the crew of an emergency they were to chime the appropriate call number, and someone in the cockpit better start thinking about answering the phone right away. He thought they had to press the button a certain number of times, depending on the system. There were two models of the B767 with different chime systems. He was not sure how they would press the chime more than once.

The checklist had been different at the various companies he had worked for. Some required the crew to perform the checklist and then verify it with the checklist. At American they did not do the checklist items until they picked up the checklist and read it. He had only been with American since the 2003 merger from TWA. He did not recall the procedures of "read and do" changing during that time frame.

He liked using the paper checklist but he was familiar with the checklist on the iPad. He liked the paper because it was immediate. The iPad required the crew to scroll through the items and was not always intuitive.

During his 9-month training cycle he had had an uncontained engine failure. He went through various types of engine failures in the simulator but those typically occurred right at V1 and pilots would hear a "bang." He then went through the items needed for an RTO.

He would continue if he had heard the words "V1" and would not reject the takeoff.

He was not sure if the simulator did an adequate job replicating an engine failure, as he had not had one in real life to be able to compare it.

If he had a tire failure and felt that the airplane was not accelerating enough or he felt he was unable to fly, then he would keep the airplane on the ground. He would have to have some other cue other than a tire failure to reject the takeoff. He did not have any knowledge of any alert in the airplane for a tire failure.

His training had only been with the pilots not the cabin crew. Pilots were supposed to have some general knowledge of what the cabin crew should be doing. They usually received that information during ground school.

During an evacuation if he was the captain, he would leave the cockpit and move to the center of the aircraft, hopefully with the megaphone, and would oversee the evacuation and make sure all passengers were off the airplane. After he verified everyone was off the airplane he would then evacuate. After he was off the airplane he would gather the flight attendants and passengers who had hopefully been corralled in one area that was a safe distance from the airplane. He would try to get the head count and check for any injuries. Before the crew would evacuate and still in the cockpit, he would call the tower to bring out ARFF. He would communicate with ARFF[12], before the evacuation. Once all passengers were off and safe, if ARFF wanted to ask him questions he would be fine with that but he had never had to do that.

If he remembered during an evacuation to grab the paperwork, he would. He felt it was always advisable to have a count of the people on board in his mind but he had not been faced with that situation. If he was not aware of the number, he would ask the first officer if he knew, then he would ask the number 1 cabin attendant.

He could not recall if there was any discussion in training about grabbing the emergency oxygen bottle if there was smoke in the cabin.

He made the V1 call at V1 but was not sure if there was policy on when the call should be made.

He had a tire failure in an MD80 on landing but not on takeoff. He heard a pop and saw a light reporting a wheel not spinning. They were able to taxi the airplane to the gate and there were no issue with controllability.

He had not had any engine failures and fire except in the simulator.

He was 63 years old.

During an evacuation, he could not recall if there was anything else other than what he had mentioned that he was supposed to grab when leaving the cockpit. If he needed an exact number of passengers, he would call dispatch. He normally had his cellular phone in his pocket.

He did not test the evacuation switch and was not sure when it would be tested but thought it might be done during the first flight of the day checks which he was not involved with. He had not activated it in the airplane but had activated it in the simulator. He was not distracted with the

[12] Airport Rescue and Fire Fighting

audible alert. When the evacuation occurred, they were pretty much wrapped up in the simulator at that point and the noise was not distracting because it was time to get out of the airplane.

He felt the accident FO was a "very good first officer" and there were no issues with checklist usage and standard operating procedures. He felt he had very good CRM skills and excellent system knowledge.

He would always prefer to have the checklist in paper form instead of via electronic means.

He had had no issue flying both the B757 and B767. As the captain, he carried the B757 QRH and the first officer carried the B767 QRH. It was available to both pilots because it was in the cockpit.

There was a PBE in the cockpit and if there was smoke in the cabin he would think to use it, but he would have to see the smoke first for it to trigger his in his mind. He would move from the front of the cabin to the back and exit out the rear exit if he was able.

American, to his knowledge, had not explained what Boeing's stance was on the read and do checklist.

He did not know the accident captain.

He could not think of anything else to add to the interview.

The interview ended at 1317.

Interviewee: Robert Richard Cassella
Date: January 10, 2017
Time: 1332 CST

Present: Katherine Wilson, Shawn Etcher – NTSB; John Chiros – Federal Aviation Administration; Laurence Abernathy – American Airlines; Gavin Tade – Allied Pilots Association

Via Teleconference: First Officer Cassella, Mr. Ray Duke, and Robert F. Aaron Jr. - Boeing

FO Cassella was represented by Mr. Ray Duke – Attorney – Allied Pilots Association - Representation

During the interview, FO Cassella stated the following:

He was 61 years old. He was a first officer on the B767 for American Airlines flying domestically, based in Miami. He was a former TWA pilot and was hired at TWA on June 29, 1990; they then merged with American in 2001.

He had an ATP certificate with type ratings in the B757, B767, and DC9[13] with commercial privileges airplane single-engine land.

He had approximately 12,000 total hours of flight experience and about 1,100 hours of flight experience in the B767. Previously, he was an MD-80 first officer for 17 years and prior to that, he was on the B727 with TWA. At American he had only been on the MD-80 and B757/767.

He recalled the trip with the accident captain prior to the accident. The captain was a standard individual; he was organized, friendly, and a good pilot. He felt the captain knew what he was doing as a captain; he was the type of captain that one could fly with and have no concerns or problems. He thought the trip they flew together was 3 days. They had delays and were not able to hang out on the overnights. He was a standard captain, which FO Cassella appreciated, and the captain made it easy to anticipate what needed to be done. The delays were a late flight on the first day for their dead head. The second day they arrived at Kennedy a little early but it was still late at night. He could not recall why they were early or late and all of the flights were on the B757.

He had seen and talked to the FO in the past but it was more of a "passing hello" and he did not know him beyond that. Had not seen the captain since the accident.

American Airlines had not shared any information with pilots about the accident. The only thing he knew was what he had seen on the news. He flew with another captain, who was an A&P that surprised him with some of the information; such as the uncontained engine explosion was surprising to him and that it severed the fuel line upstream of the spar shut off valve. He could not imagine what that would be like to deal with in the air. He was glad that the crew rejected the takeoff and felt the accident captain had to make a quick decision and was glad that the captain was able to keep it on the ground.

The accident captain used the iPad for charts and flight manuals, but he did not recall the captain looking anything up in the flight manuals. The mechanical checklist was on the console; it was the paper checklist and FO Cassella, as the FO, mostly used that checklist.

The before start engine checklist was a read and do. The accident captain was well-prepared when he walked on the airplane and there were no issues completing it; he was methodical.

They did not interact much with the cabin attendants except when they asked if the flight crew needed anything, but he was certain the accident captain would have briefed the cabin attendants while he conducted the walk around. He did not recall any adverse interactions between the captain and cabin crew.

The accident captain was more on the quiet side but he did not produce any barriers in communication. He could not provide any insights as a way for the captain to improve, as he was standard. He had flown with a lot of captains and the accident captain was in the top 5% of pilots

[13] The Boeing Company, DC-9-11, DC-9-12, DC-9-13, DC-9-14, DC-9-15, DC-9-15F, DC-9-21, DC-9-31, DC-9-32, DC-9-32F, DC-9-33F, DC-9-34, DC-9-34F, DC-9-41, DC-9-51, DC-9-81, DC-9-82, DC-9-83, DC-9-87, MD-88, MD-90-30, 717-200. Source FAA Order 8900.1 Figure 5-88

he did not mind flying with. He felt comfortable with bringing a concern to the accident captain, assuming FO Cassella believed he was correct.

He had not heard any concerns about the accident captain. He could not recall the accident captain having any concerns with the airline or the airplane. He felt American had treated them better than TWA had.

Rejected takeoffs had to be done by the captain. If the first officer was performing the takeoff, the captain would say he had the aircraft and retard the throttles. His job, as first officer, was to verify that the airplane was responding correctly. Then they would assess the situation and see what the captain thought they should do next.

When he was type rated in the airplane, he sat in the left seat and performed a rejected takeoff, although it was American's policy that the captain perform the reject. Normally in the simulator they would do rejected takeoffs, V1 cuts, and unusual attitudes.

During training they would read the evacuation checklist. Recently the airline changed the procedure where now the first officer would read the checklist and the captain would execute the items. He had learned this in his recent recurrent which was about 2 months prior to the interview. The checklist made sense; however, he had not had to accomplish that in real life. He felt that they really did not see the pros and cons of it while in training, after running a checklist so many times and also the simulator may not be as stressful of a situation as it would be in real life. He thought during the accident event, things worked out well and the cabin crew must have done an excellent job to get everyone off the airplane.

He had an engine failure prior to working for TWA in the middle 1980's. He had had one engine problem with American but that was while they were at altitude.

He had a tire failure after they got to the gate following an emergency procedure. They had to do an emergency landing due to a double medical issue. After he did his walk around he heard a "pop and hiss" as it blew a fuse plug; it was on the B767.

He had been on the B767 for about 2 ½ years. During that time he had not felt the checklist were cumbersome or hard to do. The only time he felt that way was when they went through a period with the mechanical checklist and pilots were not allowed to jump around on the checklist. American provided pilots with iPads and now pilots no longer had to do checklist items in order. An example was after getting the airplane deiced, pilots would forget to deploy flaps; the checklist would pick it up every time. He was a believer in the checklist and it was a good tool. He felt the checklists were appropriate. American removed many items from the QRH to make the procedure short, which he thought was fine but as a former flight engineer, he was used to having more information. He provided an example of when they had a window overheat situation; he felt the checklists were appropriate, he just wished they had more information.

He normally kept his QRH in his flight bag. He carried the B767 QRH but he also had a QRH on his iPad. He had used his iPad for the B757 QRH to back up the captain. He felt he had become dependent on the iPad.

It had happened that a captain had not been receptive of suggestions from him. He felt that sometimes he had to be assertive with people; he could not let it go if he saw something being done wrong. First officers cannot really call for the abort. It's up to the captain. He felt maybe once or twice a year he would have to be assertive with a captain. He was used to getting feedback from the captain if it was needed.

Sometimes the chime on the MD80 would not be heard in the back because of the airplane noise.

He had had the opportunity to train with the flight attendants back when he was initially hired at TWA in the 1990s. Pilots typically did not train with the flight attendants. He was not sure if that would be beneficial. He further mentioned that most of the flight attendants did not know how to use the oxygen mask in the cockpit. He felt cabin attendants had more experience closing the L1 door than a pilot who did not do it often. He then clarified that it would be beneficial to cross train if it enhanced safety. He felt that the cabin attendants were well trained. He felt there was no joint training because of scheduling issues.

During an evacuation, a cabin attendant was taking direction from the captain. Flight attendants should not evacuate unless the captain told them to. He thought that they were trained to look out the door to see if it was a safe exit point, but he was not certain. After the slide deployed, flight attendants helped passengers exit as quickly as they could.

He was responsible to move passengers away from the airplane. He was required to take his hat or jacket to be easily identified and he thought taking the fire extinguisher was a good idea. He thought the captain should know the souls onboard and should go through the cabin as best he could to make sure all passengers were off before exiting. If they could not recall the number of passengers, they could use a mobile app called Mobile CCI. He felt it was extremely accurate and up to date. There was a lot of information available on that app. He normally stored his phone in his flight bag. He felt he probably would not remember to take his cell phone in an evacuation. American's policy on cell phones was only to turn it off during flight and it was common sense for a pilot to store it somewhere so that it did not fly around in turbulence.

He had observed captains brief the cabin attendants before the passengers boarded; however, normally that occurred when he was conducting his preflight. He thought there was a standard brief the captains did. He also told cabin attendants not to hesitate to call the cockpit. He felt that the brand new flight attendants might not be "up to speed" on the nuances of flying. If comparing US Airways cabin attendants with American cabin attendants, there was no difference between the two companies. He felt crews accommodated the mergers with the companies and it was very rare he saw a problem with that. He maybe saw a problem once a year.

There were only about 400 TWA pilots at American now and about half of those were based in Miami. He felt the chief pilots in Miami were phenomenal.

The difference between the two types of aircraft (B757 and B767) was the landing and the B767 would roll a little quicker and was more difficult to land smoothly. He felt they were both great airplane types.

He felt the QRH for both the B757 and B767 were good, he just wished there was a little more information in them. Some of the differences was the cargo heat on the before start engine checklist on the B767 as well as other items.

He called V1 right at the V1 speed; he called the 80 knots right at 80 knots, and rotation at rotation speed.

He was asked to further discuss the tire failure he had previously experienced. When flying Los Angeles to Miami, they had a medical emergency and diverted to Albuquerque. The captain was working with the cabin and the radios; FO Cassella was flying. The airplane was at the max landing weight. He had autobrakes 2 and deployed manual brakes right at the end. They had a second medical emergency on short final as well. When at the gate, he conducted a walk around. He had never heard the fuse plugs blow before so he thought it was the APU[14], but a mechanic later told him it was the fuse plugs; when FO Cassella checked the tire, it was flat. He could not recall the weather specifics but that they were at maximum landing weight.

The procedures on using the checklist had changed several times and they had to conduct the checklist in order and could not "jump around" on the checklist. Then the airline came up with a new solution for a mechanical checklist on the iPad.

He was not certain if a flight attendant could command an evacuation without being notified from the captain, but had heard that had happened. To his knowledge, the captain was the only one that could command the evacuation as the ranking crewmember. If the captain was incapacitated, the decision to evacuate would fall on the FO.

He further clarified that he was not sure who removed some of the useful information that used to be in there. He had been told that American was making changes to the QRH to be in align with Boeing's QRH, but he had never seen a Boeing manual so did not know for sure. An example he provided was the window overheat. When he was a flight engineer, he was given a lot more information in order to trouble shoot the problem.

The accident crew sounded very calm on the ATC tapes considering the decision the captain had to make. He further added that he thought the accident captain did "a good job" during the accident events and that it was a testimonial to training.

He had nothing further to add.

The interview ended at 1440.

Interviewee: Captain Thomas Harlow Frazer
Date: January 10, 2017
Time: 1450 CST

[14] Auxiliary Power Unit

Present: Dr. Katherine Wilson, Shawn Etcher – NTSB; John Chiros – Federal Aviation Administration; Laurence Abernathy – American Airlines; Gavin Tade – Allied Pilots Association (APA)

Via Teleconference: Captain Frazer, Mr. Ray Duke, and Robert F. Aaron Jr. - Boeing

Captain Frazer was represented by Mr. Ray Duke – Attorney for APA Representation

During the interview, Captain Frazer stated the following:

He was 58 years old. He was a captain for American Airlines based in Miami. He had been a captain on the B767/B757 international division since June of 2009. He originally started with American in April 20, 1987. Other positions at American included flight engineer B727, first officer A300, and captain A300.

He had an ATP certificate with type ratings in the B757, B767, and A300[15]

He had approximately 10,000-12,000 hours of total flight experience and about 2,000 hours of flight experience in the B767.

He flew with the accident first officer one time prior to the accident. He could not remember much about the trip with the first officer but would classify it as uneventful.

He could not recall much about the first officer except that he was tall and happy. He felt he was standard to every other American pilot and did the job with no surprises. He could not recall if it was domestic flight sequence and thought it was a 2 or 3 day trip.

He did not know the accident captain.

There were no abnormalities he could recall other than maybe being reassigned during the sequence, if he was thinking about the right trip. He had heard nothing about the accident first officer since the accident.

Training for rejected takeoffs was in the ground school and in the simulator. It was no different than any other airplane. Every now and then the training department changed the procedures a little bit but it was still standard – stop the airplane, work the issue and evacuate if necessary.

Above 80 knots he would reject a takeoff because of something severe and not safe to take it in the air, engine fire, etc. He had to assess the unknowns and then make a decision. The manual listed reasons when to perform a rejected takeoff such as stated previously. Some of the scenarios in the simulator result in a simulated evacuation. He had no issues performing the evacuation checklist. They would stop the airplane, evaluate the situation, use the evacuation checklist on the back of the QRH and then the captain needed to decide whether to evacuate. He did not think it

[15] Airbus (formerly known as Groupement d'Inerte Economique Airbus Industires, France), Airbus 300B. Source FAA Order 8900.1, figure 5-88.

was a cumbersome checklist; it was pretty standard although he did not have experience at another airline to compare it to.

He had never performed a rejected takeoff above 80 knots. He had not had a tire failure at any time during the takeoff roll or on landing.

The captain's responsibility after the evacuation was initiated was to grab the needed equipment depending if they landed on water or land, check the back of the airplane, and exit. He then was to assist in gathering up the passengers.

The flight attendant received the passenger count and provided it to the captain; however, he was not certain who was required to have the passenger count during an evacuation; he would have to look in the manual.

After the airplane was evacuated he would check the paperwork if he had it to determine the passenger count. If he did not have the paperwork, he would ask the number one flight attendant or he could use a phone to call dispatch to get the final load numbers. He also could take check the documents on his iPad or phone. But all these things took time when the captain was supposed to be doing something else.

He was required to grab the megaphone and ELT[16] as exiting the cockpit in an evacuation. He may grab the crash axe if necessary.

Discussion in training on the portable oxygen bottle was to grab it if you think you would need it. There was no written guidance that he could recall on what the captain should do if the cabin was filled with smoke.

There had been a time when he could not hear the cabin attendant call chime but he could not recall whether it was inoperative or he had tuned it out.

American's policy was to answer the phone when the cabin attendants called up. If there was an emergency in the cabin, he thought the cabin attendants would chime 4 times; but he did not think it would get to the fourth chime before he would answer. He experienced the cabin attendant chime not working but it was not often; normally it was because one of the handsets was not seated properly.

He had performed a RTO below 80 knots; however, he could not recall the reason for the ECAM[17] notification on the Airbus. He knew it was an engine situation but not sure much more. It was not a challenging RTO, they just had to get the aircraft stopped.

He had not had an engine failure or fire on the airplane.

[16] Emergency Locator Transmitter
[17] Electronic Centralize Aircraft Monitor

They received recurrent training on new procedures. He was not sure what the reason was for revisions but he assumed it was that they had a better way of doing something and he classified most of the changes as "minor." He provided an example of the placement on the checklist.

He classified his training as "good" and straightforward. The instructors had a desire to teach pilots; it was supposed to be a no threat event but everyone studied so they were ready for the training. Most of the information was available for pilots to study.

The FO carried the B767 QRH and the captain carried the B757 QRH. He normally stored his QRH in his flight kit bag. On a B757, FOs could pull up the QRH on their iPad or the paper QRH could be stored in a place where it could be reached by both pilots. He had to have a QRH to be able to fly; the policy had been changing but he thought that the paper copy was still required.

If he needed to call dispatch he would use his cell phone which he normally stored in the cup hole on the aircraft; he felt he would remember to grab his phone in the event of an evacuation.

He felt that the training used to be a longer time frame, every 12 to 18 months which he felt was too long. Training being conducted every 9 months was "good" and he thought it got pilots to where they needed to be. He trusted the training department and if they say more training was needed then they would know.

If he had not flown with a flight attendant on a previous leg that day, he would brief them. He felt it broke down barriers between the cockpit and cabin.

He felt that the evacuation checklist changed to read and do checklist, it was different but did not cause any concern on his part.

He liked the iPad for what he did with it, but he liked the paper checklist in the cockpit.

He would not necessarily reject the takeoff for a cargo fire above 80 knots.

He felt the training for a rejected takeoff was "pretty good." The scenarios did not load pilots up but it was designed to fit in a specific time period. When they got to the evacuation they did everything fast in the simulator as they are trying to finish everything. There were some issues but the only solution was to extend training.

He had nothing further to add and had not thought about the event until he was asked to allow the NTSB to interview him. He felt the crew did a "great job" but he was not there.

The interview ended at 1528.

Interviewee: Tony Thomas Yount
Date: January 10, 2017
Time: 1540 CST

Present: Katherine Wilson, Shawn Etcher – NTSB; John Chiros – Federal Aviation Administration; Laurence Abernathy – American Airlines; Gavin Tade – Allied Pilots Association

Via Teleconference: Robert F. Aaron Jr. - Boeing

Captain Yount was represented by Gary L. Halbert – Attorney for Holland and Knight

During the interview, Captain Yount stated the following:

He was 62 years old. He was a check airman for American Airlines in the B757/B767 since August of 2011. He was also an APD and had held that position for the previous 5 months.

He had an ATP certificate with type ratings in the B727[18], B757, and B767, DC-10[19].

He had approximately 5,500 hours of flight experience in the B767 and thought maybe 6,000 hours in the B727 and 1,500 in the DC-10.

He went to school in Colorado then was in the Air Force for 10 years and then 11 years in the National Guard flying F4s and F16s. While in the Guard, he joined American and flew all three seats in the B727, as an FO on the DC-10, as a FO on the B757/B767, and was currently a captain on the B767 since 2002.

He reported directly to Captain Abernathy.

His duties and responsibilities were to instruct and evaluate. As an APD he was to represent the FAA issuing certificates and type ratings. He was an X type check airman. He spent about 30 to 40 percent of his time in the airplane and the rest in the simulator. The past year he had been in the simulator for 8 of the 12 months due to staffing requirements. There was not a lot of flight standards work and the L types covered that. The most recent 2 months he had spent on the line which was nice.

He did an R9 with the accident first officer. He had gone back and looked at his notes from the session and nothing stood out as abnormal. The route was DFW to ABQ and he gave the crew a fire enroute with a diversion. Since the scenario called for an evacuation that would have been done at the end. There was nothing he could recall specifically about the evacuation and how it was conducted, and he had made no notes about it. The first officer was paired up with a captain and the grading was fine with one item a 3. He estimated that the average score he assigned was a 4. He thought the 3 was on an approach issue. In order to get a 5 the pilot would have to do a "really nice job," such as if someone went through with no errors. If there were minor errors but the pilot caught it that would be a 4. He had the option to debrief any items rated a 3 or redo them. His notes only indicated "flaps" so he assumed they may have selected flaps 15 instead of 20 on a single-engine approach. It was debriefed according to his notes.

[18] The Boeing Company, B-727, B-727-100, B-727-200. Source FAA Order 8900.1, Figure 5-58
[19] The Boeing Company, DC-10-10, DC-10-10F, DC-10-15, DC-10-30, DC-10-30F, DC-10-40, DC-10-40F. Source FAA Order 8900.1, Figure 5-88

A rejected takeoff scenario was fairly scripted. Prior to January they did not conduct RTOs in the R9 simulator event; those were conducted in the RTS the day prior. Once he got a student, the pilot had already been trained and executed the maneuver. They talked about how it went in the RTS.

The R9 script was one simulated flight segment and lasted about 2 hours depending on the scenario; it was a line oriented type flight. In the last training cycle it was a flight from DFW to ABQ. . The RAD portion was to demonstrate to proficiency in different areas and usually took about another 90 minutes to 2 hours. This past cycle was RNAV approaches.

He typically did initial training, R9s and R18s.

During the previous scenario, there was a simulated cabin crew interaction. The interaction was probably smoke in the cabin and it usually got more urgent as they got closer to their destination. What airport the crew chose to divert to was up to the crew. Part of it was so the crews could demonstrate how they got the airplane down expeditiously if necessary.

He had performed a slow speed RTO in the B727. He recalled that it was snowing but could not recall specifics of why they rejected. He had never had an engine failure or fire in line flying.

He encouraged pilots to use the iPad. He felt that some of the resistance may be age related as he liked paper checklists. He felt it would make scenarios and a pilot's job easier in the long run.

Since going to the new evacuation checklist procedure, he asked pilots if they liked it and without exception pilots appeared to like it. Before he felt it may have been a little cumbersome.

After 80 knots a captain should reject for engine failure, fire, a reason the airplane would not fly, or windshear up to 100 knots.

He expected a pilot to call V1 at V1.

V1 was an action point, not a decision point. The books taught the pilots to move their hands at V1 but he typically lifted his hands from the thrust levers 5 to 10 knots prior to the action point. He could not recall when he was taught that.

During an RTO, the FO was expected to back up the captain. Therefore, FOs monitor the speed brakes, thrust revers, and autobrakes. When the airplane decelerated below 60 knots, the FO should call ATC and notify them.

If he was faced with a smoke filled cabin he may or may not walk to the back of the cabin before evacuating depending on if he felt it was life threatening or not. There was a portable oxygen bottle onboard but he was not directed to grab it on a normal basis; there was also a PBE in the cockpit and the cabin.

He did not know the accident captain.

He had not heard anything about either of the accident pilots since the event, other than that they "did a great job."

They discussed the event in their meetings, in generic terms. They were emphasizing RTOs in the current training cycle; however, he thought that may have been decided prior to the accident.

He did give a grading of 5 "quite often" but usually not for the entire training event. He did not recall if he had given the accident FO a grade of 5 on anything.

He had used the PBE in training to verify they knew how it worked.. There was classroom instruction on how to put it on and use it in every recurrent training, but not all pilots put it on. They also did not do scenario-based training for the PBE. He had never put on a live PBE. He was sure there were some restrictions to wearing a PBE although he could not recall when he had put one on.

The FO was to grab the fire extinguisher during an evacuation. The captain was to grab a megaphone when they exited, if he could find one. The location of the megaphone varied on the airplanes. Captains had an idea where it may be and may use the process of elimination to locate it. It had always been contentious on where it was located. There was a label on the door where it would be located. The captain was responsible to know how many souls were onboard; the gate agents provided the total souls onboard. He felt during an evacuation that all crewmembers were to assemble the passengers but that could be difficult as passengers run away from the airplane. If they needed to know the number of passengers onboard he was not sure how he could verify the number. He stored his cellular phone in different location in the cockpit; lately he had been putting it near the coffee cup holder. He had been thinking about where to put the cell phone since the accident. There was no policy where to stow the cell phone only that it needed to be in airplane mode. Prior to cell phones, they would have had to go to operations to find a phone.

He had a couple of checkrides where the pilot did not successfully complete the checkride; one was a go-around that "crashed" and another was willful violation of company policy. There was a lengthy debrief of the training afterwards. He felt pretty in tune with how people were feeling and did not want pilots to go away from training feeling down. He would tell the pilot that he would provide additional training and recheck. He saw a pilot that received an unsatisfactory check ride about a year later and that pilot told him "it was all good."

The training department had pilots come from various aircraft and some of the habits from the previous airplanes had to be overcome. At American, things were fairly standard.

If a pilot wanted to provide feedback on the training he received, there were ways he could raise that issue with the union, on a debrief form, or take it to the fleet captain. If he recognized that a pilot was having an issue with him, he would probably stop the debrief. He never had to do that but had received compliments on the training he provided. He wanted pilots to learn some things during training and to have a basic understanding of policies and procedures. He used what he had learned to train other pilots, and he usually did that in the briefing because the AQP program was pretty well scripted. Even he learned some things in the simulator.

He felt the memory items they had on the airplane were adequate. He would like to see some things changed on some memory items. He wanted pilots to be pilots. He did not think he wanted more memory items.

The rejected takeoff was a maneuver in their QRH but there was no checklist.

He enjoyed being an APD; it was another angle of what they did.

He was not certain if there was a placard in the cabin for where emergency equipment was stored.

He was not a captain when there was a 6-month cycle but he thought the 12-month cycle they allowed for first officers was too long. He thought a 9-month cycle was adequate.

He was not sure how the crew was scheduled for a check in the B757 or B767 simulator.

He was not sure about CRM being briefed between the cockpit and cabin crew; that did not mean it would not come up.

He normally keeps his QRH in his kit bag but he knew some crews put it on the glareshield, but he would forget it there. The company only required the QRH to be readily available.

The training department was good at putting out the changes before they went into effect. His supervisor solicited their feedback for the proposed changes.

He was asked to explain the R9 cycle RLE and RAD portions. The RLE was a simulated line oriented flight which started at the gate and they tried to keep it as real as possible. They did not brief the event prior. The pilots went into the simulator as though it was a complete flight, including ground operations, taxi out, takeoff, enroute, descent and back to the gate; and all checklists. There was no prebrief of the scenario. It was a graded maneuver. The RAD portion was demonstrated to proficiency and he talked freely to the crew during the event. The RAD changed through a couple of cycles. The RLE had distractors that varied over the years. Some of those may be minor events to fires. The instructor could select which distractors to use.

He clarified that the way the evacuation checklist was designed could have been a little confusing and people would give a different answer on how it should be completed; however, now it was more "cut and dry."

He clarified that he thought there may be guidance within the airplane about the location of emergency equipment. The emergency equipment was placarded in the cabin on overhead bins, and the placard looked like the item it was. An example was a megaphone. He felt that if he saw a placard he would know what it represented. He would know generally where to look for the items, but said he would get off the airplane if that was more important than looking for the megaphone.

He had nothing further to add.

The interview ended at 1637.

Interviewee: Walter Joseph Polgar
Date: January 10, 2017
Time: 1653 CST

Present: Katherine Wilson, Shawn Etcher – NTSB; John Chiros – Federal Aviation Administration; Laurence Abernathy – American Airlines; Gavin Tade – Allied Pilots Association

Via Teleconference: Robert F. Aaron Jr. - Boeing

Captain Polgar was represented by Gary L. Halbert – Attorney Holland & Knight

During the interview, Captain Polgar stated the following:

He was 60 years old. He was a check airman in the B757/B767 fleet for American Airlines. He was a check airman in 2001 for a few months until September 11, 2001, and went back to the line in December 2001. He was called up again in 2003 as a check airman for 5 to 6 months for the master bid run then went back to flying the line until he rejoined in January of 2008 and had been a check airman since. He had been on the B757/B767 since 2001. He had flown the B727 as a flight engineer and first officer, DC10 as a first officer, and FK-100 as a captain.

He had an ATP certificate with type ratings in the B757, B767, FK-100, VC-700[20], and VC-800. He also had private, commercial, single-engine and multiengine land certificates. Had a CFI but had not renewed it, an A&P mechanics rating, and a flight engineer rating.

He had close to 18,000 total hours of flight experience, about 6,300 hours of flight experience in the B767 as captain, and about 200 hours in type as first officer.

His date of hire was May 1, 1985, with American Airlines. Prior to American, he did strictly civilian flying. He towed gliders and flight instructed and worked as a mechanic on the VC-700 and 800.

He was an Xtype check airman.

He estimated that he spent about 70 percent of his time in the simulator and about 30 percent of his time on the line doing line work or line rotating. That had changed, however, over the past few months. In the simulator, he did both the R9 and R18s. He could not recall if he did an RTS the last cycle for qualification training and thought he taught day 4 of CQ training. He also conducted type-rating checkrides.

His duties and responsibilities on the airplane included helping a pilot "get up to speed" with day-to-day operations; sometimes it was a new qualification for various items like flying to South America or over the North Atlantic. In the simulator he was to train and evaluate the students he had been given. He also would evaluate other instructors on how to operate the simulator or how

[20] Vickers-Armstrong British Aircraft Corporation, UK, 700 & 800 Series. Source FAA Order 8900.1, Figure 5-58.

to interact with students. Lately about a third of his time was spent supporting the FAA in simulator evaluations.

He reported to Captain Abernathy.

A typical R9 would begin by meeting in the briefing room, checking pilots' certificates. They went through a 2-hour brief, took a break, went to the simulator, and ensured the students had a simulator safety brief. The student would then fly the simulator through the required training protocol. A typical R9 scenario followed SPOTS[21] which were prewritten scripts with minor modifications allowed, like vectoring to final. There were emergencies given on the R9, which was strictly a LOFT scenario, which originated in DFW at the gate, push back, taxi out, with runway change, and departure. Subsequently there would be some sort of issue like departing without autothrottle, then continuing to ABQ. While enroute a problem would occur such as a fuel pump or generator issue which would have resulted in continuing, or an engine fire which would result in a divert, then a landing at an airport with an escalation with smoke in the cabin and subsequent evacuation.

In a R18, typically a captain would fly from Boston with a set visibility and then perform a non-ILS approach to a landing or a go around. Then the first officer would do a similar profile that resulted in a landing. He would reset the simulator for takeoff. The first officer will then perform a takeoff to an engine failure but he could not recall other specifics.

Some crews may not get an evacuation on an R9 portion but they would have gotten an evacuation during the 2 days of training.

He clarified that a seat fill was where a professional simulator pilot or check airman would sit opposite of the student.

The abnormal event was a choice for the instructor that came from a predetermined list. The escalation of urgency from the cabin was both in the air and on the ground. He was certain it was in the air but thought it also had issues on the ground.

The checklist protocol required the first officer to read the checklist item, the captain was to accomplish it, and the first officer would then aid in the response or action.

The grading scale was a subjective grade. More pilots passed than failed; he could not give a high rating to someone he was not going to pass. He did not like to call it pass, fail, or bust. American's philosophy was to train to proficiency; he believed that was still the philosophy for R9 and R18 events. For a student passing it was typically a grade of 4.

A pilot would need additional training if they were given a rating of 1 and possibly a 2. Instructors were allowed to give out a 2 and repeat an item without extra training. He rarely gave a 1 or 2.

Pilots liked the new checklist procedures. The first officers usually liked it but the captains were newer to the concept. The comments were usually more from the first officers. Pilots were getting hands on experience, briefing the new checklist, and then they had the opportunity to use it during

[21] Specific Procedures Operational Training

training. He thought it was in the RTS the day prior. He felt the captains felt indifferent. Some of the comments were that the captains may tell the first officers what to communicate to ATC during an evacuation and now the captain made the communication rather than relaying to the first officer what information to say.

He felt that the majority of pilots were still using the paper QRH instead of the iPad.

He would give a crew a 4 on the grading if they made an error and then trapped the error. He would give a 3 on anything he would have to debrief the crew on. An example was a crewmember rushing through the evacuation and he would debrief them to slow down; a mistake was not made but there was the potential for a mistake to be made.

He never had an engine failure or fire on takeoff in the airplane.

He could not recall having a tire failure on takeoff or landing in the airplane.

He had rejected a takeoff at low speed. The FO advanced the thrust levers and they had a configuration warning for the parking brake and discontinued the takeoff. Another time he got a call from the tower to stop the takeoff roll.

He recalled seeing some of the videos of the accident that were shared with the pilot group.

He did not know the accident pilots; he had heard about them and was told that the crew "did a good job."

A simulator event might require a seat fill pilot if for example the day prior to the R9 they used two first officers during the training. Because the R9 required a captain and a first officer, that event would require a seat fill. Other examples would be if a pilot was not able to make it to the training for some reason.

He had given a grading of 5, and it happened often. He would give a 5 if a pilot did a maneuver with no mistakes.

On an R9 he can repeat 2 items one time each; a repeat was required if there was a grade of 2. He could repeat no more than 2 items before the R9 was unsatisfactory. If there were more than 2 items that needed to be repeated, the remainder of the simulator event would then be used as a training event to work on the areas as additional training. The pilot would have to come back again for the check event. He felt he was able to put most pilots at ease.

He had a problem with the B727 losing oil pressure. The captain he was flying with elected to continue at reduced thrust, which he felt was as close as he had come to an engine failure. The flight engineer shut down the engine right after touchdown.

They simulated an evacuation in training. Crewmember duties during an evacuation were written down and were to assess the situation. He expected a close to verbatim explanation of their duties from the crewmembers. The first officer was to put on his hat for authority for the passengers, grab

the fire extinguisher, go to the cabin, assess, and then exit the cabin via one of the forward available exits to help with the passenger evacuation and moving them away from the airplane. The purpose of the fire extinguisher was to extinguish fires on passengers as they were evacuating. The captain was to assess the cabin, get the megaphone, and if possible exit via a rear exit. He also would grab his hat before leaving the flight deck. As a technique he would suggest to grab the paperwork with the number of souls on board.

They were now referring pilots to the company system operations control (SOC) to determine the number of souls on board. The phone number for the SOC was listed in their QRH. He usually carried his cell phone on his side. He felt most international pilots kept their cell phone attached to them. He could not recall if there was a specific place crewmembers kept their cell phone.

The QRH had to be readily available to both crewmembers. He carried both the B757 and B767 QRHs with him as a check airman and would make sure that the FO he was flying with had his QRH handy.

He was asked how someone could become a check airman or APD at American. There had been different ways of applying over the years. It started with submitting and application to their chief pilot. Some chief pilots requested a resume and a one page summary of why you want to be a check airman. The chief pilot would recommend or rank order the applications for consideration, which would then go to the fleet captain. Usually he would get other check airmen that had flown with the applicant to get feedback for the fleet captain who would then choose the best applicant. He liked being a simulator check airman versus a line check airman.

He had failed pilots before.

He graded most pilots a 4 when performing an evacuation; he could not recall seeing anyone conduct it perfectly. Crews completed the entire evacuation checklist and would sound the alarm and then they could silence it.

When asked about FO/FO simulator pairings he stated he would usually remind the pilots that if they were international qualified they could be in the left seat if the captain was incapacitated. He felt it was a great opportunity because during an international flight it could be two first officers in the cockpit and if the captain was sick, one FO could be designated as PIC. The FOs he talked with would say “that’s true” and that they had not thought about that.

He had not conducted a training scenario under the new cycle that began in January 2017 but he was not aware of any more emphasis on evacuations.

He clarified that his primary task was on special assignment assisting the fleet captain and fleet training manager, Captain Abernathy, who was “wearing both hats.” His special assignment was as a lead check airman for operations. Some fleets had leads on both the fleet captain and fleet training side which was why he was helping Captain Abernathy. He had maintained his check airman currency but for the last 2 months he had been doing more administrative duties.

He clarified that as a check airman he had both QRH checklists. He further clarified that line pilots would sometimes place it on the glareshield. He had seen various locations but the glareshield was probably one of the safe spots to put it. If the B767 QRH was in the kit bag he felt that it would not be accessible to both pilots but it was allowed by the airline.

He had nothing further to add to the interview.

The interview ended at 1752.